REMARKS

The Applicants have carefully reviewed the Office Action of March 15, 2002 and in response cancel claims 25-33 without prejudice while presenting new claim 34 for the review and approval of the Examiner. The rejection of claims 1-24 is traversed without amending those claims.

On page 2, section 1 of the Office Action, the Examiner raises an objection to the Abstract of the Disclosure. In that objection the Examiner references page 8, line 134 and states that it is unclear to which "Figures 1 and 2" the applicant is referring. Page 8 is not a part of the Abstract of the present application and page 8 does not include a line 134. Accordingly, based upon the information provided the Applicants are unable to address the objection to the Abstract. The Applicants will, however, be glad to make any necessary revisions in response to further information provided by the Examiner.

Turning now to the claims, claim 1 very clearly patentably distinguishes over U.S. Patent 5,591,289 to Souders et al. when considered in combination with U.S. Patent 4,985,106 to Nelson. The Souders et al. patent generally relates to the production of a headliner by means of a compression molding process. The headliner includes a fibrous core 26, a cover 28 and a scrim 30. The fibrous core is formed from a non-woven high loft batting of polymeric thermoplastic fibers such as nylon, polyester, polyethylene, polyolefin, polypropylene and blends of fibers formed from these polymers and copolymers. The cover 28 is a cloth material such as knitted nylon tricot, non-woven carpeting and knitted polyester tricot material. The scrim is a relatively lightweight material such as polyester, rayon, nylon and blends thereof. A thermoset resin 46 is applied to the core 26 to adhere the scrim 30 thereto.

As described at column 5 line 50 to column 6 line 33, a batting blank is passed

through an oven 44 and heated to activate binder fibers in the blank. A thermoset resin 46 is then applied to the fiber skin layer 34 and the scrim and cover are applied to the batting blank. The scrim and cover are then cut to the size of the batting blank to form a three-layer headliner assembly 54 that is positioned in a press mold 56 and molded with heat and pressure in a compression molding operation.

The Souders et al. reference clearly does not teach the step of "forming an insulator precursor by orienting an insulation insert in a desired location between a first facing layer and a layer of polymer based blanket material" as set forth in present claim 1. In fact, an insulation insert is not provided in the Souders et al. reference. Additionally, while the Souders et al. reference refers to removing the laminated assembly from the mold once it has "acquired sufficient self-supporting strength", the Souders et al. patent does not explicitly teach the step of cooling the insulator precursor in the molding press to set the precursor in its molded shape as set forth in present claim 1. In fact, the Souders et al. patent explicitly teaches removing the assembly from the press and placing it in a fixture that acts as a cooling fixture and a trim nest (see column 6 lines 27-30). Thus, the Souders et al. patent actually teaches cooling the assembly outside of the mold. Thus, the Souders et al. patent actually teaches away from the present invention as set forth in claim 1.

The secondary reference to Nelson fails to provide the teachings missing from the Souders et al. reference that would allow the combination of these references to form an appropriate basis for the rejection of claim 1 under 35 USC § 103. More specifically, the Nelson patent relates to the construction of various insulation panels and discloses the concept of locating a vibration barrier pad 70 of insulation material of a specific preselected shape directly on the bottom sheet 22 (see, for example, column 10 line 47 to column 11 line 5). It must be appreciated, however, that Nelson strictly relates to flat panel construction and provides no relevant teaching relating to molding operations.

Stated another way, the Nelson reference does not teach the concept of subsequently molding the product into a desired shape nor does it suggest that such molding could be done while maintaining the insert in a desired or selected position within the product. Thus, it should be appreciated that there is no teaching in the cited references to Souders et al. and Nelson to lead one skilled in the art to combine the references in the manner proposed by the Examiner. Thus, claim 1 is clearly patentable.

Claims 2-8 which depend from claim 1 are equally allowable for the same reasons. Further, each of these claims includes additional limitations that support their allowability. For example, claims 5 and 6 refer to applying pressure to the insulator precursor in the molding press at a level of between approximately 0.5-100.0 psi for between substantially 5-45 seconds. Neither the Souders et al. reference nor the Nelson reference disclose such processing parameters.

In an effort to address this shortcoming, the Examiner cites U.S. Patent 4,418,031 to Doerer et al. The Doerer et al. patent relates to the molding of products from fibrous mat material including various thermoplastic fiber materials. The Doerer et al. reference explicitly teaches molding at temperatures of about 325°F to 590°F at a pressure of about 200-1000 psi for a mold cycle time of as little as one minute or less. The Doerer et al. reference then goes on to state that the temperature, pressure and time cycle required may be varied depending on the final product requirements. It should be appreciated, however, that this "varying" of temperature, pressure and time must be read in the context of the ranges explicitly set forth in the Doerer et al. patent. (See particularly column 5 lines 42-47).

In contrast to the explicit teachings of the Doerer et al. patent, claim 5 of the present application refers to the applying of pressure at a level of between approximately 0.5-100.0 psi. This range is from 2 to 2000 times less than that explicitly taught in the Doerer et al. patent while cycle times of less than a minute (between 5-45 seconds) are

claimed. In maintaining the rejection, the Examiner ignores the differences in the level of applied pressure and simply states that it would have obvious for one skilled in the art to have used routine experimentation to determine the molding time and pressure as set forth in present claims 5 and 6 based upon the teachings of the Doerer et al. patent. Essentially, it is the Examiner's position that the present invention as set forth in claims 5 and 6 is one that is obvious to try. However, in accordance with a long line of cases including *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Geiger*, 2 USPQ2d 1276 (Fed. Cir. 1987) and *In re Goodwin*, 198 USPQ 1 (CCPA 1978), "whether a particular combination might be 'obvious to try' is not a legitimate test to patentability". Thus, in accordance with this line of cases, the Examiner's position is improper.

A further detailed review of the teachings of the Doerer et al. patent also points out why the rejection should be considered improper and claims 5 and 6 found patentable over the cited art. More particularly, it first must be noted that 35 U.S.C. §112 requires the specification of a patent application to contain ". . . a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention." Certainly in any production process, the desired goal is to produce the product as inexpensively and quickly as possible. In accordance with these production goals mandated by the economic pressures of the marketplace, the inventors of the Doerer et al. patent found it necessary to apply pressures of 200-1000 psi to produce molded products from polymer fiber materials in cycle times of "as little as one minute or less". These pressures, in accordance with the mandate of the patent statutes, represent the "best mode contemplated" by the inventors for carrying out the invention.

In contrast, the present invention claims a process whereby a multilayer composite

insulator is molded from polymer fiber materials at significantly reduced pressures of 0.5-100.0 psi and processing times of 5 to 45 seconds. Accordingly, the present invention sets forth and claims a process whereby the product is produced in a similar or faster time at reduced pressures. Reduced pressures require the input of less energy and, therefore, cost savings during the production run. Accordingly, production costs are reduced.

The present invention as set forth in claims 5 and 6, therefore, represents a distinct improvement over the cited art and provides benefits in reduced production costs long sought by inventors in this field of endeavor. If it had been obvious to the inventors of the Doerer et al. patent that the product could be produced at these reduced pressures within the same or shorter time frame, the Doerer et al. patent would have disclosed the presently claimed processing parameters. Instead, the Doerer et al. patent explicitly discloses different parameters and there is no indication how the presently claimed parameters would be obvious in light of the explicit teachings of the Doerer et al. reference which teach to the contrary.

It should also be appreciated that the magnitude of the difference in the applied pressure is also not within the realm of simple experimentation. Specifically, the presently claimed processing pressures of 0.5-100 psi are between 2 and 2000 times less than the processing parameters of 200-1000 psi set forth in the Doerer et al. patent. The fact of the matter is the Doerer et al. patent actually teaches away from the present invention and the present invention is only within the skill of one of ordinary skill in the art if the explicit teachings of the Doerer et al. patent are ignored and hindsight is utilized. It is improper to do this. See, for example, *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988) stating that it is well established that it is error to find obviousness where references "diverge from and teach away from the invention at hand." Thus, claims 5 and 6 clearly patentably distinguish over the cited art and should be allowed.

Claims 9-16 very clearly patentably distinguish over U.S. Patent 5,976,295 to Ang when considered in combination with the Nelson, Doerer et al. and Souders et al. patents. More specifically, the primary reference to Ang relates to a method of molding a component such as a headliner or sun visor for an automobile. As described, the product incorporates a polyester finishing fabric 12, a mixed fiber padding layer 14, a core 20 of composite polyester and glass fibers and a scrim 34. In accordance with the production process as described beginning at column 3 line 62, the padding 14 and core 20 are initially stacked or combined to provide a primary charge 24 for a mold 26. The charge is heated in a convection oven and then transferred in the heated condition into the mold cavity. The polyester finishing sheet material 12 is layered into the mold prior to the feeding of the primary charge thereto. The scrim may be added to the charge to form the outer periphery of the molded headliner.

In contrast to the explicit teachings of the Ang patent, claim 9 includes the step of forming an insulator precursor by orienting an insulation insert in the desired location between a first facing layer and a layer of a polymer based blanket material. The Examiner acknowledges on page 13 of the Office Action that Ang does not teach this step of claim 9. Additionally, claim 9 teaches preheating the insulator precursor and then transferring the preheated insulated precursor to a molding press while polymer binding fibers of the layer of polymer based blanket material remain softened. As set forth in claim 9 the insulator precursor includes the first facing layer, the insulation insert and the layer of polymer based blanket material. All three layers are preheated and transferred into the mold. In sharp and total contrast, Ang explicitly teaches only preheating the core and padding layers and actually layering the sheet material 12 into the mold prior to feeding the preheated padding and core charge into the mold (i.e. the sheet material is not preheated). Thus, it should be appreciated that the Ang patent actually teaches away from the present invention when it explicitly teaches one to layer the

finishing sheet material into the mold without preheating that layer with the remainder of the charge.

The secondary reference to Nelson, cited and applied by the Examiner, fails to address the shortcoming noted above with respect to the Ang patent. Specifically, while the Nelson patent does teach the concept of orienting an insulation insert between layers of an insulation panel, the Nelson reference clearly does not teach preheating all those layers together prior to delivery into a mold. Further, the Nelson patent does not even teach that an insulation precursor including a specifically oriented insulation insert is capable of being molded into any desired shape. This is because Nelson only discloses a flat panel and nothing more. Based upon this analysis it is very clear that claim 9 patentably distinguishes over the cited art and it should be allowed.

Claims 10-13 which depend from claim 9 and are rejected on the same grounds are equally allowable for the same reasons.

Claim 14 also depends from claim 9 and includes the additional limitation of applying pressure to the insulator precursor for between substantially 5-45 seconds. In rejecting claim 14 the Examiner recites not only the Ang and Nelson patents discussed above but also the Doerer et al. patent. While the Doerer et al. patent does teach molding cycle times of one minute or less, it must be appreciated that the Doerer et al. patent does not address or supply the shortcomings noted above with respect to the Ang and Nelson patents as they relate to independent claim 9. Specifically, the Doerer et al. patent relates to a molding process wherein the mat is not preheated and then transferred to a mold. Instead, the entire heating of the mat takes place within the mold (see column 5 lines 40-57). Thus, the Doerer et al. patent cannot possibly teach or suggest the concept of preheating an insulator precursor including an insulation insert between a first facing layer and a layer of polymer based blanket material and then transferring that preheated insulator precursor to a mold as set forth in claim 9 from which claim 14 depends. This

is true whether the Doerer et al. patent is considered singularly or in combination with the Ang and Nelson patents. In explicitly teaching that the finishing sheet material or facing layer 12 is layered in the mold separately from the preheated charge, Ang explicitly teaches away from the present invention as claimed and the secondary reference to Doerer et al. does nothing to alter this interpretation. Accordingly, claim 14 clearly patentably distinguishes over the cited art and should be allowed.

The same is true of claims 15 and 16 which also depend from claim 9. As noted above, the Ang patent teaches away from the present invention as claimed. The secondary references to Nelson and Doerer et al. provide no teaching to overcome this shortcoming of the Ang patent and therefore, when combined with Ang provide no basis for the proper rejection of these claims.

This is also true of the Souders et al. patent. While the Souders et al. patent teaches passing the batting blank 32 of the eventual headliner product through an oven 44 prior to molding, the steps of: (1) forming an insulator precursor by orienting an insulation insert in a desired location between a first facing layer and a layer of polymer based blanket material, (2) preheating the insulator precursor to a temperature sufficiently high to soften the polymer binding fiber in that blanket material and (3) transferring the preheated insulator precursor to a molding press while the fibers remain soft are clearly not taught in the Souders et al. patent. Clearly, the Ang, Nelson, Doerer et al. and Souders et al. patents, whether considered singularly or in combination, simply do not teach the invention as set forth in claims 9-16 nor do they make that invention obvious in any manner. Accordingly, the patentability of these claims is clearly established.

Claim 17 clearly meets the requirements of 35 U.S.C. §112. Claim 17 recites the step of heating the insulator precursor in the molding press to a temperature sufficiently high to soften only those polymer binding fibers in the at least one selected area of the

layer of polymer based blanket material. When read in conjunction with the rest of the patent specification, this language makes it clear that only the polymer binding fibers in the selected area are heated sufficiently to soften and polymer binder fibers in the blanket material in other areas are not heated to the softening temperature.

As already noted above, the primary reference to Souders et al. does not teach or suggest the forming of an insulator precursor by orienting an insulation insert in a desired location between a first facing layer and a layer of polymer based blanket material as set forth in claim 17. Further, the primary reference to Souder et al. does not teach or suggest the closing of the insulator precursor in a molding press and the crimping of the at least one selected area of the insulation precursor where the polymer binding fibers in that at least one selected area are the only polymer binding fibers heated sufficiently to soften during the molding process.

None of the secondary references cited by the Examiner fully address the shortcomings of the primary reference.

As noted above, the Nelson patent does disclose an insulation panel having an insulation insert in a desired location but that panel is not subsequently molded into any desired shape as set forth in claim 17 nor does Nelson in any way teach or suggest that this would be possible while maintaining the insert in the desired position within the insulator precursor.

U.S. Patent 5,366,678 to Nomizo et al. is cited for its disclosure of a compression molding process wherein a thermofusible fibrous blank is inserted into the mold and heat and pressure are applied to a specific region so that the region melts and hardness and density are increased in the region. It should be appreciated that the Nomizo et al. patent relates to the production of cushioning material for seat pads requiring processing times of 60 to 80 minutes or more (see example 1). As such, the teachings of the Nomizo et al. patent are not particularly relevant to the production of insulation materials where speed

of production and cycle times are critical to produce a commercial product at a reasonable cost. It should also be appreciated that the Nomizo et al. patent does not teach in any respect the orienting of an insulation insert in a desired location between a first facing layer and a layer of polymer based blanket material. It is therefore clear that claim 17 patentably distinguishes over the cited prior art of record. This is also true of claims 18-20, 23 and 24 which depend from claim 17 and were rejected on the same grounds.

Claims 21 and 22 depend from claim 17 and recite, respectively, the steps of applying pressure to the precursor at a level of between approximately 0.5-100.0 psi and compressing the precursor for substantially 5-45 seconds. Such processing parameters are neither taught nor suggested in the Souders et al., Nelson and Nomizo references. Recognizing this failing, the Examiner cites the Doerer et al. reference.

The Doerer et al. patent, as noted above, teaches applying a pressure of approximately 200-1000 psi during processing. This pressure range explicitly recited in the Doerer et al. patent is from 2 to 2000 times greater than the pressure range set forth in claim 21. Further, the same or shorter processing time is recited in claim 22 and the Doerer et al. patent provides no basis for leading one skilled in the art to believe that the lower pressures claimed will provide the desired molding in the time period claimed. Further, like the other references, the Doerer et al. patent in no way teaches or suggests that an insulator precursor with a specifically oriented insulation insert may be subsequently molded to provide a desired product. Accordingly, whether considered singularly or in combination, the Souders et al., Nelson, Nomizo et al. and Doerer et al. patents fail to provide an appropriate basis for rejection of claims 21 and 22 under 35 USC § 103 and, accordingly, claims 21 and 22 should be allowed.

It should also be appreciated that new claim 34 very clearly patentably distinguishes over the cited art and should be formally allowed. Claim 34 reads on a process for forming a multilayer composite insulator. That process includes the steps of

forming an insulator precursor by orienting an insulation insert in a desired location between a first facing layer and a layer of a polymer based blanket material including polymer binding fibers. Additionally, the process includes the molding of the insulator precursor into a desired shape by heating the insulator precursor, applying pressure to the insulator precursor, softening only those polymer binding fibers present in at least one selected area of the polymer based blanket material and crimping the at least one selected area.

As noted above, the only reference of record in the present application disclosing the concept of forming an insulator precursor by orienting an insulation insert in a desired location between a first facing layer and a layer of a polymer based blanket material is the Nelson patent. The Nelson patent, however, relates to the construction of an insulation panel and does not in any way teach or suggest the subsequent molding of the precursor into a desired shape or that such molding can be performed while maintaining the insulation insert in the desired location in the final product. The present invention is the first relating to such a process and the art of record provides no basis whatsoever for the rejecting of claim 34 as presented in this application. Accordingly, claim 34 should be allowed.

In summary, all the pending claims patentably distinguish over the prior art and are in condition for formal allowance. Upon careful review and consideration it is believed the Examiner will agree with this proposition. Accordingly, the early issuance of a formal Notice of Allowance is earnestly solicited.

If any fees are required pertaining to this response, the Applicants request that they be charged to Deposit Account number 50-0568.

Respectfully submitted,

OWENS CORNING

Stephen W. Barns
Reg. No. 38,037

Date: 11 JUNE 2002

Owens Corning
Patent Dept., Bldg. 54
2790 Columbus Road
Granville, Ohio 43023
(740) 321-7173

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application	:	
JEFFREY A. TILTON	:	
Ser. No. 09/607,268	:	Examiner: Staicovici, Stefan
Filed: June 30, 2000	:	Group Art Unit: 8605

For: PROCESS FOR FORMING COMPOSITE INSULATOR

VERSION WITH MARKINGS TO SHOW CHANGES MADE

34. A process for forming a multilayer composite insulator, comprising:

forming an insulator precursor by orienting an insulation insert in a desired location between a first facing layer and a layer of a polymer based blanket material including polymer binding fibers; and

molding said insulator precursor into a desired shape by;

heating said insulator precursor;

applying pressure to said insulator precursor;

softening only those polymer binding fibers present in at least one selected area of said polymer based blanket material; and

crimping said at least one selected area.